the 3′ to 5′ direction, instead of the standard 5′ to 3′ direction. The revised Sequence Listing corrects this error. Applicants believe such error to be obvious in that one skilled in the art would have known that these sequences are listed in the 3′ to 5′ direction at page 4 because they are unambiguously derivable from the known amino acid sequence and the nucleic acid sequence of the kinase as disclosed by this invention.

The Examiner has rejected claims 15-21 under 35 USC 112, first paragraph, alleging that the claims contain subject matter that is not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors had possession of the claimed invention at the time of filing. Applicants have amended independent claim 15 in response to this rejection.

Claim 15 now incorporates limitations taken from the specification to define the scope of kinases as those that have the properties as described throughout the specification, and thus enable one of ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims. The cited primers included in claim 15 are very specific to the kinases of the present invention that have the claimed properties. Previously known kinases are not encoded by a DNA characterized in that the listed primers hybridize to it. This characteristic is disclosed at page 4, second paragraph and page 5, first paragraph.

New claims 54 through 58 do not contain the limitation as to which primers bind the DNA sequence encoding the recombinant protein; however, they are limited to recombinant proteins expressed in a host cell transformed with DNA encoding the native enzyme. Support is found throughout the specification for these claims. Applicants believe the new

claims, as well as the amended claims, are in order to obviate the Examiner's previous 112 rejections. Applicants respectfully request withdrawal of such rejection and allowance of the claims.

The Examiner also rejected claims 15-21 under 35 USC 102(a) as being anticipated by Johansson et al. Applicants have previously filed certified copies of two German priority applications, DE 19 846 838and DE 19 914 644, filed on October 12, 1998 and March 31, 1999, respectively. Attached is a statement by the translator, Ms. Anette Roth, describing her translation of the first German application (DE 19 846 838), and demonstrating the minor differences between that application and the case filed presently. The second German priority document, DE 19 914 644 is identical to the specification in the case filed presently. Applicants assert their right to claim priority to such German patent applications. As such, Johansson et al. is not qualified to be prior art to the presently pending application. Applicants respectfully request that the 102(a) rejection regarding that reference be withdrawn. New claims 54-58 are also entitled to this foreign priority, and no rejection on this reference should issue.

The Examiner has also alternatively rejected the claims under 35 USC 102(b) or 103(a) over two Munch-Petersen et al. references. Applicants respectfully disagree with both of these alternatives.

Neither of the cited references contains the limitations of the claims. Neither reference teaches a recombinant enzyme, but rather only discusses isolation and purification of the native enzyme. The pending claims clearly require a recombinant enzyme; thus, neither of the cited references can be used for rejection under 102(b).

Further, the present invention is not obvious from the cited references. The present invention demonstrates the surprising feature of increased stability over time, and also surprisingly shows such stability in the absence of stabilizers as compared to the native enzyme. These surprising attributes are demonstrated clearly in Example 7 of the specification. Neither of the cited references suggests that there would be any advantage in terms of the stability of the enzyme if the kinase was expressed recombinantly. Further, this increased stability is described in the claims. As such, the combination of cited references is missing a necessary element for the claims as drafted, with no suggestion as to how to achieve such increased stability. Because neither of the references, either alone or in combination, suggest that recombinant expression will lead to a marked and distiguishable improvement in stability when compared to the native enzyme, this rejection cannot stand. Applicants respectfully request withdrawal of the 102/103 alternative rejections over the Munch-Petersen et al. references.

Respectfully submitted,

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MARKED-UP COPY OF CLAIMS

15. A recombinant kinase characterized by:

a) remaining stable during the synthesis of nucleoside monophosphate in the absence of stabilizing SH reagent and stabilizing proteins,

b) accepting all natural deoxynucleosides, [and]

c) being obtainable from cells of a nonvertebrate organism,

d) being encoded for by a DNA sequence which can hybridize to one or more primers selected from the group consisting of SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7 and SEQ ID NO:8, and

e) further characterized in that the recombinant kinase is obtainable by the following steps:

1) isolation of the coding sequence of the recombinant kinase,

2) cloning of the structure gene in an expression vector with an inducible promotor for E. coli,

3) transformation of the expression vectors in an E. coli host strain,

4) expression of the kinase in E. coli by induction,

5) gathering of the cells by centrifugation and resuspending the cells in a buffer containing 20 mM potassium phosphate, 5 mM $MgCl_2$, 1 mM DTT, 10% glycerin, 1% Triton X100 and 0.1 mM phenylsulfonylfluorides.

16. The recombinant kinase of claim 15 wherein said nonvertebrate organism is an insect.

17. The recombinant kinase of claim 15 further characterized by having a specific activity of at least 20 U/mg (1U = 1μmol/min) for all natural deoxynucleosides.

18. The recombinant kinase of claim 15 further characterized by having a specificity constant of >10,000 $M^{-1}s^{-1}$ for all natural deoxynucleosides.

19. The recombinant kinase of claim 15 further characterized by having a half-life of ≥50 h in Tris buffer with 5 mM $MgCl_2$ and of ≥ 25 h in water at 37° C.

20. The recombinant kinase of claim 15 further characterized by having a temperature optimum between 40° and 60° C.

21. The recombinant kinase of claim 16 wherein said insect is *Drosophila melanogaster.*

54. A recombinant kinase characterized by:

a) remaining stable during the synthesis of nucleoside monophosphate in the absence of stabilizing SH reagent and stabilizing proteins,

b) accepting all natural deoxynucleosides, and

c) being isolatable from a host cell transformed with DNA containing the *Drosophila melanogaster* gene coding for the native kinase.

55. The recombinant kinase of claim 54 further characterized by having a specific activity of at least 20 U/mg (1U = 1μmol/min) for all natural deoxynucleosides.

56. The recombinant kinase of claim 15 further characterized by having a specificity constant of >10,000 $M^{-1}s^{-1}$ for all natural deoxynucleosides.

57. The recombinant kinase of claim 15 further characterized by having a half-life of ≥50 h in Tris buffer with 5 mM $MgCl_2$ and of ≥ 25 h in water at 37° C.

58. The recombinant kinase of claim 15 further characterized by having a temperature optimum between 40° and 60° C.